STEREOCOMPARATOR
FINAL SITE INSTALLATION
REPORT FOR THE MONTH OF JULY, 1971

STATINTL

During July, the installation work [redacted] at the final job site reached the point where no significant work could continue until the environmental airconditioning system could be brought up to specification. There are a total of five systems that require conditioned air:

1. The general room.
2. The stage jets.
3. The electronic cabinets.
4. The optical system.
5. The film cooling.

None of these systems were operational at the beginning of July.

During the month the walls and ceiling of the clean room were closed in by the room contractor, and various elements of the airconditioning system were operated.

During this airconditioning startup period, problems were encountered which delayed the conditioned air systems performing to their specified levels. This, in turn, prevented [redacted] STATINTL from completing the final adjustment for some of the Stereocomparator subsystems.

While the airconditioning systems were being adjusted, there were periods of high humidity which apparently have caused some external and internal corrosion to the Stereocomparator. The possible extent of the internal damage to the Stereocomparator has not yet been assessed, since some of the potentially affected systems can only be operated after the airconditioning equipment is up to specification. At this time it is known, however, that there are problems with the electronic logic packages.

The effects of the corrosion that are apparent on the exterior surfaces of the Stereocomparator stage and laser measuring equipment are not necessarily related to degrading the performance of the equipment. The concern is that there may be internal corrosion to the optical systems or interferometers. This can only be determined during operational tests.

By July 30 the airconditioning systems had stabilized to the point that:

1. The general room was operating over a range of 70° to 72° F, at about 60% relative humidity.
2. The stage jets were varying between 66° and 73° F (between left and right sides).
3. The electronic cabinets were varying from 74° to 80° F, with relative humidity reaching 70%.
4. No information is available on the optical system at this time.
5. No information is available on the film cooling at this time.

The maintenance portion of the diagnostic computer program is being used successfully to locate problems in the electronic logic.

Although the installation work for the Stereocomparator during July was hampered by a variety of problems of which some examples have been given above, it is anticipated that August will be a much more productive period since the airconditioning problems appear now to be coming under control.

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6 August 1971

U. S. Government

Gentlemen:

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Reference: Contract No. [redacted] STATINTL

In reference to the above contract, [redacted] has incurred additional standby time at the installation site during the period of July 26 through July 30, 1971. This standby time is caused by the room environment not meeting the required specifications. [redacted] is attempting to work and progress with the installation in every area possible, and we are most anxious to complete our work at the site. We would appreciate any effort you might exert to expedite the completion of the installation site so that we may proceed with full effort to the successful completion of the contract.

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The lost time by [redacted] personnel by day is as follows: STATINTL

July 26	18 hrs.
July 27	24 hrs.
July 28	24 hrs.
July 29	35 hrs.
July 30	26 hrs.
Total time involved	127 hrs.
Total Per Diem days lost	22

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[redacted]

[redacted] STATINTL

[redacted] management and technical personnel are available to provide any STATINTL
other information you might require.

Very truly yours,

[redacted] STATINTL

29 April through 30 July 1971

[redacted] STATINTL

Aug. 6, 1971

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[redacted] wally told me you wanted some information on the effect of Humidity on the equipment in the [redacted] electronic racks.

We consider that 55% is a quite satisfactory Relative Humidity. The ambient temperature should not go much above 77°F.

We consider that 60% RH is the highest "good" value for best reliability of the electronic logic. We consider that 65% is a "bad" value as the performance of the logic is substantially degraded. I am differentiating between reliability and performance. The reliability is very poor at 70% RH and above especially at 90% RH or so.

There are some figures that I have that apply to the performance of the Stereocomparator logic related to the sample and hold circuits for the optics drives. For example, in the Relative Humidity range 60% to 65% the sample & hold capacitors lose less than 10 millivolts in the computer scanning cycle of one thirtieth of a second. This is for our 5.0 Volt logic level.

At 65% RH the capacitor voltage sag in 1/30 second is in the range 20 to 100 millivolts. One system

measured, had a 400 millivolt sag. You will notice that these values are 2 to 10 times or so worse that the values above given previously.

At 70% RH the 1/30 second sag was 0.5 to 3.0 Volts (out of 5.0 Volts).

In the range of 70% to 80% RH the sample and hold capacitors sagged to zero Volts in less than one millisecond.

These various values of sag versus Relative Humidity were obtained experimentally at the job site and are real numbers. I'm sure you will agree that the electronics can not be useful over 60% RH.

It is possible to design electronic equipment for a tropical environment, (we did not do this), however, size and cost go up alarmingly, and I don't believe you would have wanted to do this.

Hopefully we are more or less out of the woods with the air conditioning & can now get back to work again at our main job. Regards

[redacted]

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